

C. Constantinides
U.S.S.N. 10/044,296
Page 2

This listing of claims will replace all prior versions of claims in the application.

Claim 1. (currently amended) A method for evaluating myocardial biological tissue using ^{23}Na or ^{39}K magnetic resonance imaging (MRI), comprising:

- a) treating the myocardial biological tissue with an iron oxide contrast agent so as to attenuate the ^{23}Na or ^{39}K MRI signal for ventricular cavity blood and viable well-perfused tissue; and
- b) imaging the tissue with ^{23}Na or ^{39}K magnetic resonance to detect infarcted myocardial tissue.

Claim 2. (original) The method of claim 1 wherein the tissue is imaged with ^{23}Na MRI.

Claim 3. (original) The method of claim 1 wherein the tissue is imaged with ^{39}K MRI

Claim 4. (previously presented) The method of claim 1 wherein the tissue is cardiac tissue.

Claim 5. (previously presented) The method of claim 1 wherein the tissue comprises infarcted cardiac tissue.

Claim 6. (previously presented) The method of claim 1 further comprising assessing the MRI image to detect infarcted tissue.

Claim 7. (previously presented) The method of claim 1 wherein the contrast agent comprises one or more iron atoms coordinated with a polymer.

Claim 8. (previously presented) The method of claim 1 wherein the contrast agent comprises one or more iron atoms coordinated with a polymer having oxygen substitution.

C. Constantinides
U.S.S.N. 10/044,296
Page 3

Claim 9. (previously presented) The method of claim 1 wherein the contrast agent comprises one or more iron atoms coordinated with a polysaccharide.

Claim 10. (previously presented) The method of claim 1 wherein the contrast agent comprises one or more iron atoms coordinated with a dextran.

Claim 11. (previously presented) The method of claim 1 wherein the contrast agent is MION-46.

Claim 12. (previously presented) The method of claim 1 wherein the contrast agent is administered to a subject suffering from or susceptible to myocardial infarction.

Claim 13. (original) The method of claim 12 further comprising selecting a subject suffering or susceptible to myocardial infarction and then administering the contrast agent to the selected subject.

Claim 14. (previously presented) The method of claim 1 wherein the contrast agent is administered to a subject and a magnetic resonance study is made of the subject's heart.

Claim 15. (original) The method of claim 14 wherein the magnetic resonance study differentiates between normal myocardial tissue, injured myocardial tissue and infarcted myocardial tissue.

Claim 16. (previously presented) A method for identifying infarcted myocardial tissue of a subject using ²³Na or ³⁹K MRI comprising:

a) administering to the subject an imaging-effective amount of an iron oxide contrast agent so as to minimize signal intensity differences between ventricular cavity, blood and well-

C. Constantinides
U.S.S.N. 10/044,296
Page 4

perfused viable myocardium, maximize signal intensity differences between non-viable myocardium and ventricular cavity blood in myocardial infarction, and maximize signal intensity differences between non-viable myocardium and well-perfused viable myocardium in myocardial infarction; and

b) imaging the subject's heart with ^{23}Na or ^{39}K magnetic resonance to thereby identify infarcted myocardial tissue.

Claim 17. (original) The method of claim 16 wherein the subject is suffering from or has suffered cardiac disorder.

Claim 18. (original) The method of claim 16 or 17 wherein the subject is suffering from or has suffered heart failure or cardiogenic shock.

Claim 19. (original) The method of claim 16 or 17 wherein the subject is suffering from or has suffered a cardiovascular disorder.

Claim 20. (previously presented) The method of claim 16 wherein the tissue is imaged with ^{23}Na MRI.

Claim 21. (previously presented) The method of claim 16 wherein the tissue is imaged with ^{39}K MRI.

Claim 22. (previously presented) The method of claim 16 wherein the contrast agent comprises one or more iron atoms coordinated with a polymer.

Claim 23. (previously presented) The method of claim 16 wherein the contrast agent comprises one or more iron atoms coordinated with a polymer having oxygen substitution.

C. Constantinides
U.S.S.N. 10/044,296
Page 5

Claim 24. (previously presented) The method of claim 16 wherein the contrast agent comprises one or more iron atoms coordinated with a polysaccharide.

Claim 25. (previously presented) The method of claim 16 wherein the contrast agent comprises one or more iron atoms coordinated with a dextran.

Claim 27. (previously presented) The method of claim 16 wherein the contrast agent is MION-46.

Claims 28-36. (canceled)

Claim 37. (new) The method of claim 1, further comprising, after treating the myocardial tissue with an iron oxide contrast agent, manipulating echo time (TE) so as to assist in identifying infarcted myocardial tissue.

Claim 38. (new) The method of claim 37, further comprising selecting the quantity of contrast agent and echo time so as to minimize signal intensity differences between ventricular cavity blood and well-perfused viable myocardium, maximize signal intensity differences between non-viable myocardium and ventricular cavity blood in myocardial infarction, and maximize signal intensity differences between non-viable myocardium and well-perfused viable myocardium in myocardial infarction.

Claim 39. (new) The method of claim 16, further comprising, after administering to the subject an imaging-effective amount of an iron oxide contrast agent, manipulating echo time (TE) so as to assist in identifying infarcted myocardial tissue.